

# Claims

- [c1] 1. An integrated circuit comprising:  
a plurality of cores operatively attached to at least one transmitter and at least one receiver;  
an optical transmission network embedded within at least one wire level of the integrated circuit;  
said at least one transmitter for sending data on said optical transmission network; and  
said at least one receiver for receiving data on said optical transmission network.
- [c2] The integrated circuit of claim 1, wherein the at least wire level is a plurality of wire levels, and wherein the transmission network is embedded in the plurality of wire levels.
- [c3] The integrated circuit of claim 1, wherein said at least one transmitter sends data between two cores of said plurality of cores across said optical transmission network.
- [c4] The integrated circuit of claim 1, wherein said receiver data between two cores of said plurality of cores across said optical transmission network.

- [c5] The integrated circuit of claim 1, wherein said optical network includes a plurality of optic planes.
- [c6] The integrated circuit of claim 5, wherein said plurality of optic planes includes one of an oxide layer and a glass layer.
- [c7] The integrated circuit of claim 5, wherein a base of said plurality of optic planes is non-reflective.
- [c8] The integrated circuit of claim 5, wherein data can be sent received between said plurality of optic planes.
- [c9] The integrated circuit of claim 1, wherein said at least one transmitter comprises a LED.
- [c10] The integrated circuit of claim 1, wherein said optical network is adapted to transmit multiple frequencies of light simultaneously.
- [c11] The integrated circuit of claim 5, wherein said optical network further comprises a plurality of optical vias.
- [c12] 12.A method of transmitting signals within an integrated comprising:  
providing said integrated circuit, wherein said integrated circuit includes a plurality of cores and a plurality of optical paths;

selecting an optical path from said plurality of optical paths for transmission of data; and  
transmitting data on said selected optical path.

[c13] The method of claim 12, wherein said plurality of optical is comprised of one of glass and oxide.

[c14] The method of claim 12, wherein transmitting data includes data from an optical transmitter.

[c15] The method of claim 12, wherein transmitting data includes data on an optical receiver.

[c16] The method of claim 12, wherein transmitting includes propagating different frequencies of light on said selected optical path.

[c17] The method of claim 12, wherein said transmitted data an electromagnetic radiation with a frequency in a range from about  $10^{11}$  Hz to about  $7.5 \times 10^4$  Hz.

[c18] An integrated circuit comprising:  
an optical transmission network;  
a plurality of cores operatively attached to said optical transmission network; and  
a plurality of controllers operatively attached to said optical transmission network and said plurality of cores.

[c19] The integrated circuit of claim 18, wherein said plurality

controllers are adapted to select an optical transmission path from said optical transmission network for transmission of data.

[c20] The integrated circuit of claim 18, wherein said optical network comprises a plurality of optical planes.